

Response to Alabama Department of Environmental Management Comments
Draft Site Investigation Report
Former Rifle/Machine Gun Range, Parcel 104Q (dated December 2002)
Fort McClellan, Calhoun County, Alabama

Comments from Stephen A. Cobb, Chief, Governmental Hazardous Waste Branch, Land Division, dated April 1, 2003.

Specific Comments

Comment 1: Page 5-4, Line 36. This line states that comparison to naturally occurring background concentrations was used as one of the screening methods. While the use of 2 times the mean concentration of a constituent in background is appropriate, the use of the upper background range as the sole means to eliminate a constituent as a COPC without additional supporting information is not appropriate. This issue should be clarified in the text.

Response 1: There is no Line 36 on Page 5-4. Site metals data were re-evaluated in accordance with the new background screening protocol agreed to by the BCT in March 2003. The three-tiered process consists of statistical testing and geochemical evaluation to select site-related metals. The background screening methodology is described in the technical memorandum "Selecting Site-Related Chemicals for Human Health and Ecological Risk Assessments for FTMC: Revision 2," (Shaw Environmental, Inc., 2003).

Comment 2: Page 5-6, Line 16. The text states that weight-of evidence considerations included frequency of detection, concentration of sample locations where high levels of constituents are detected and relative magnitude of exceedances. To simply state that a weight-of-evidence approach was used is not sufficient. Text should be added providing the weight-of-evidence for each constituent selected or eliminated as a COPC.

Response 2: The PERA was revised to incorporate the results of the new background screening protocol and to include additional lines of evidence for each constituent selected or eliminated as a COPEC. Section 5.5, which summarizes the PERA, was updated accordingly based on the revised PERA. Much of the detail was intentionally kept out of Section 5.5 because this information is already provided in the complete PERA included as Appendix I of the report.

Comment 3: Appendix I, Page 3, First Paragraph. This paragraph discusses the use of background for evaluation of COPECs. While the use of the Background Threshold Value (BTV) is appropriate, the use of the Upper Background Range (UBR) is not if it is used as the sole means of eliminating a constituent as a COPEC. The text should be edited to state that the UBR should be used as one line of evidence in the evaluation of COPECs. The text should also

state that a constituent cannot be eliminated as a COPEC based solely on the use of UBR comparisons.

Response 3: See response to Comment No. 1.

**Response to U.S. Environmental Protection Agency Comments
on the Draft Site Investigation Report
Former Rifle/Machine Gun Range,
Parcel 104Q (dated December 2002)
Fort McClellan, Calhoun County, Alabama**

Comments from Doyle T. Brittain, Senior Remedial Project Manager, dated January 29, 2003.

Specific Comments

Comment 1: Page 5-4, Line 36. This line states that comparison to naturally occurring background concentrations was used as one of the screening methods. While the use of 2 x's the mean concentration of a constituent in background is appropriate, the use of the upper background range as the sole means to eliminate a constituent as a COPC without additional supporting information is not appropriate. This issue should be clarified in the text.

Response 1: There is no Line 36 on Page 5-4. Site metals data were re-evaluated in accordance with the new background screening protocol agreed to by the BCT in March 2003. The three-tiered process consists of statistical testing and geochemical evaluation to select site-related metals. The background screening methodology is described in the technical memorandum "Selecting Site-Related Chemicals for Human Health and Ecological Risk Assessments for FTMC: Revision 2," (Shaw Environmental, Inc., 2003).

Comment 2: Page 5-6, Line 16. The text states that weight-of evidence considerations included frequency of detection, areal extent of detected constituents, and relative magnitude of exceedances. To simply state that a weight-of-evidence approach was used is not sufficient. Text should be added providing the weight-of-evidence for each constituent which is selected or eliminated as a COPC.

Response 2: The PERA was revised to incorporate the results of the new background screening protocol and to include additional lines of evidence for each constituent selected or eliminated as a COPEC. Section 5.5, which summarizes the PERA, was updated accordingly based on the revised PERA. Much of the detail was intentionally kept out of Section 5.5 because this information is already provided in the complete PERA included as Appendix I of the report.

Comment 3: Appendix I, Page 3, First Paragraph. This paragraph discusses the use of background for evaluation of COPECs. While the use of the background threshold value (BTV) is appropriate, the use of the Upper Background Range (UBR) is not if it is used as the sole means of eliminating a constituent as a COPEC. The text should be edited to state that the UBR should be used as one line of evidence in the evaluation of COPECs. The text should also

state that a constituent can't be eliminated as a COPEC based solely on the use of UBR comparisons.

Response 3: See response to Comment No. 1.

Comment 4: **Appendix I, Table 1 - Constituents of Potential Ecological Concern in Surface Soil.** The UBR appears to have been used as the sole means of eliminating the following constituents as COPCs: aluminum, chromium, manganese, and nickel. Without additional supporting information, these constituents should be considered COPCs.

Response 4: See response to Comment No. 1.

**Response to U.S. Army Corps of Engineers Comments
Draft Site Investigation Report
Former Rifle/Machine Gun Range, Parcel 104Q
Fort McClellan, Calhoun County, Alabama**

Comments from Rich Kinsella, U.S. Army Corps of Engineers, dated March 19, 2003.

General Comment

Comment 1: Section 1.3 page 1-3: The first paragraph talks about a (1982) cleared area that extends into the western portion of the *firing line* and says it is Feature 1 in Figure 1-2. The second paragraph talks about a gravel area with a power pole in the *northwestern corner* of the parcel. Are these two descriptions of the same area? Feature 1 of Figure 1-2 is labeled: “gravel area with utility pole” and is located on the western portion of the Parcel (the same area is cleared in the 1982 aerial photo), but it is not in the NW corner, and is over 300 feet south of the cited location of the firing line. Please clarify.

Response 1: No, they are separate areas. For clarification, the sentence in question in the first paragraph was revised to indicate “...an area that extends into the western portion of the *parcel*...” The last sentence of the second paragraph was revised to state “A gravel area with a utility pole...is located in the *northern area* of the parcel.” Figures 1-2 and 3-1 were revised accordingly.

Comment 2: Tables 3-2 and 3-5: Please change *Metals* to *TAL Metals* under the Analytical Parameters heading. Please change other parts of the report including Appendixes H and I the same way.

Response 2: Comment noted. Specific information on analytical parameters is provided in Section 3.4 of the report.

Comment 3: Table 3-2: Although not mentioned in this document, it looks as though IT was trying to adhere to the standard QC sampling rules: one field duplicate sample for every ten environmental samples, and one matrix spike/matrix spike duplicate (MS/MSD) sample for every twenty environmental samples. When 22 samples are collected, 3 field dups and 2 MS/MSD samples need to be collected (for each media). In this case, both the surface and subsurface soil samples had only 2 duplicates and one MS/MSD associated with them, neither of which is sufficient. Please keep this in mind for future projects. Were the additional analyses (VOCs, SVOCs, pesticides, herbicides) also called for 10% of the samples? If so you should round these up, so instead

of two, out of 22, surface soil samples getting “full” analysis, it would be three.

Response 3: Comment noted. The recommended level for field duplicates (FD) in the FTMC SAP is 10% of the total number of planned field samples and 5% for MS/MSD. The number of samples from each matrix is taken into account when planning the number of FDs and MS/MSDs. It is the planned objective of each sampling event to comply with the SAP recommended level. In some cases, additional samples are collected in the field or other changes occur that impact compliance with that guidance. In the future, Shaw will ensure that the number of QA/QC samples is rounded up to meet the frequency requirements.

As far as planning the number of samples for “full suite” analysis for historical firing range sites, generally 10% of the total number per matrix has been shown to be adequate on past sites. This frequency can be increased or decreased depending on the site, total number of samples per matrix, and other factors. In general, the site work plan reflects whatever was requested in the scope of work specified by the USACE in their original request for proposal. This can be modified during the work plan stage or in the field to reflect new information, site conditions, or changing requirements.

Comment 4: Section 3.6 page 3-6: Please specify what TCLP methods were used to analyze the Solid IDW. Was the Liquid IDW analyzed for any specific set of metals? RCRA 8? TAL? Please specify.

Response 4: Solid IDW samples are prepared using TCLP extraction (EPA Method 1311). The TCLP extract is then further prepared (Method 3010A) and analyzed for the eight RCRA metals. VOCs (Methods 5030B and 8260B) and SVOCs (Methods 3520C and 8270C) specified in the TCLP method (1311) are also quantified.

Liquid IDW samples are analyzed for the TAL metals (and TCL VOCs and TCL SVOCs) to determine if the waste meets ADEM requirements for disposal on the ground surface.

Comment 5: Section 5.1 page 5-2 Pesticides: For consistency throughout the report, please change *DDT* to *4,4'-DDT* so that it matches the notation used in the data tables, Section 6.0 and Appendixes.

Response 5: 4,4'-DDT is referred to as 4,4'-DDT throughout the report.

Comment 6: Section 5.2 page 5-3 Metals: Says that the aluminum concentration in *three* samples exceeded the SSSL and background concentrations, this is incorrect. *Eighteen* samples had concentrations exceeding these

values, only samples GP12, GP14, GP18 and GP19 had concentrations of aluminum that did not exceed both the SSSL and background concentrations. Please correct.

Response 6: Agree. The text was revised per comment.

Comment 7: Section 5.4 page 5-5: The last paragraph says that no organic chemicals were found in the groundwater samples. Methylene chloride *is* an organic compound, and *was detected* in the groundwater sample collected from MW 01.

Response 7: Agree. The text was revised to indicate “*With the exception of methylene chloride, a common laboratory contaminant, no organic chemicals...*”

Comment 8: Section 7.0 page 7-2: The Corps’ document EM 200-1-3 was updated, and greatly expanded in February 2001. Please change the date of the referenced document. (What was once know as the Corps’ Shell Document, has been included in the EM 200-1-3 update.)

Response 8: Comment noted. The text was revised per comment.

Comment 9: Appendix A: Is there a specific reason why five subsurface soil samples (GP01, 04, 05, 06 and 10) were collected from a two-foot interval (2 to 4-ft bgs)? All of the other subsurface soil samples were collected from one-foot intervals (see Table 3-2). Of these samples, the ones screened with a PID all had readings of 0.0 ppm, as did most of the other soil samples collected during this project.

Response 9: No. In some instances where direct-push technology (DPT) sampling was employed, the geologist simply recorded the entire 2-foot length of the DPT sampler as the sample depth rather than specifying a particular 1-foot interval within the sampler. In other cases, a 1-foot interval was recorded because a hand auger – not DPT – was used to collect the sample.

Comment 10: Appendixes B and C: Shows that MW01 and MW02 were installed on 9 May 2002, but not developed until early June (5th & 6th and 6th & 7th). Isn’t this too long of a wait? I am not a geologist, but according to notes I have, the Corps requires that well development take place between 48-hours and 7-days after the well has been grouted. Could this late development be a reason why the turbidity of the MW02 did not decrease below 125 NTU when it was sampled (mentioned in Section 3.2.5)? If the wells were not properly/completely developed, the samples collected and their analytical results are not reflective of this area’s groundwater, and thus cannot be used as the basis for a “No Further Action” recommendation.

Response 10: The wells were installed and developed following procedures outlined in Appendix C (Monitoring Well Installation and Maintenance Plan) of the *Draft Installation-Wide Sampling and Analysis Plan, Revision 3*. As stated in Appendix C, development will begin *no sooner than* 48 hours after grouting the well.

The well development log for HR-104Q-MW02 shows that the water turbidity was elevated throughout the maximum 8-hour development period and that over 360 gallons of water were removed during development. During sampling, the turbidity was 125 NTUs despite removing 5 well volumes of water and implementing low-flow purging. It should be noted that the boring log for MW02 indicates the presence of silt and fine sand. Based on prior experience at FTMC, the presence of silts and fine sands can cause turbid conditions like those encountered during the development and sampling of monitoring well MW02. It would appear that MW02 is simply a turbid well because of site-specific geological conditions. Shaw believes that MW02 *was* properly developed and that the analytical results from this well and from MW01 *are* reflective of the area's groundwater.

Comment 11: Appendix H

Media of Interest and Data Selection: This section states that “All samples were analyzed for metals, nitroaromatic/nitroamine explosives, VOC, SVOC, organochlorine pesticides and chlorinated herbicides. This is misleading, only four out of the forty-four soil samples underwent this “full analysis”. Please change to show that the only analysis *all* samples received were: *TAL Metals* and “explosives”. Does “organochlorine pesticides” cover both *chlorinated pesticides* and *organophosphorous pesticides*? If not, please change. (I am unfamiliar with this term)

The next paragraph states “...*the samples were analyzed for a sufficiently wide spectrum of parameters...*”, is this really true? Only two of these (surface soil) samples had a wide spectrum of analysis performed, is there really enough data from the “extra” methods to base decisions on?

Summary: This section is also misleading when presenting what analyses were performed on the samples. Please rewrite. Also states that organic chemicals were not identified in groundwater, this is not true. Methylene chloride was detected in the one groundwater sample analyzed for it, and although the concentration was “B” qualified during validation, it was not rejected.

Response 11: The reviewer raises three issues in three paragraphs; each is answered separately:

1) The reviewer raised concerns about the description of the analytical program. Agreed; the sentence in question will be revised as follows: “All samples were analyzed for target analyte list (TAL) metals and nitroaromatic/nitramine explosives. Approximately 10 percent of the samples were analyzed also for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), organochlorine pesticides and the chlorinated herbicides.”

The reviewer questioned the term “organochlorine.” The term organochlorine has been well accepted by the chemical and medical community as evidenced by the approximately 13,100 hits on the MSN Dell internet search engine. The term refers to chlorine-containing pesticides, such as 4,4’-DDT, aldrin, chlordane, heptachlor and many others. Most organochlorine pesticides are insecticides that act upon the nervous system. Prolonged mammalian exposure to levels encountered in the environment leads primarily to liver effects. Some members of this class also induce endocrinological effects. The organochlorine pesticides do not include the organophosphorous pesticides, most of which act on the nervous system by an entire different mechanism; i.e., cholinesterase inhibition. Given its widespread acceptance and understanding, the term organochlorine pesticides will not be changed.

2) The reviewer raised concerns regarding the sufficiency of the analytical program. Yes, Shaw believes there is enough data from the “extra” methods on which to base decisions. Sampling locations and analytical parameters were originally presented to the BCT at the February 2002 BCT meeting. Except for adding one soil sample location, the BCT agreed with the proposed approach. In March 2002, Shaw issued the final site-specific work plan, which was approved by ADEM and EPA in concurrence letters dated May 14, 2002 and October 18, 2002, respectively.

3) Summary: Agreed; the statement regarding analyses will be revised as stated above. The statement regarding organics in groundwater will be revised as follows: “Organic chemicals were not identified in groundwater except for one sample blank-contaminated with methylene chloride.”

Comment 12: Appendix I

Media of Interest and Data Selection: This section also infers that all twenty-two surface soil samples had the “full” analytical array performed on them. Please reword to show that the only analyses all surface soil samples received were *TAL Metals* and Explosives.

Ecological Risk Characterization: States that the three pesticides and one herbicide found in surface soil samples can be discounted since their detection was localized--found in only one sample. Analysis for these compounds was localized, only two out of twenty-two samples were analyzed for these compounds, this is a 50% detection rate. If these compounds are taken off the COPEC list it should be for a better reason than the one presented.

Response 12: The text was revised to indicate that all 22 surface soil samples were analyzed for metals and explosives and 2 of the 22 samples were also analyzed for VOCs, SVOCs, pesticides, and herbicides.

Additional lines of evidence and discussion were also provided to describe the elimination of constituents as COPECs.